

What is claimed is:

1. A power line communication device for a vehicle which is included in an electronic control unit and configured to transmit and receive communication signals between the electronic control units, the electronic control unit being connected to a power line for supplying direct-current power to a vehicle and configured to receive a communication signal superimposed on the direct-current power in the power line, to superimpose a generated communication signal on the direct-current power in the power line to transmit the communication signal, and to thereby control each function of the vehicle, the power line communication device for a vehicle comprising:

a detector configured to detect the communication signal received through the power line and to extract incoming data including a digital signal; and

15 a waveform shaper connected to the detector and configured to subject the incoming data to waveform shaping by dulling a signal waveform of the incoming data to convert the incoming data into an analog signal and by converting the analog signal into a digital signal based on a given threshold.

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2. The power line communication device for a vehicle according to claim 1, wherein the signal waveform of the incoming data is integrated and converted into the analog signal.

25 3. The power line communication device for a vehicle according to claim 2, wherein the waveform shaper comprises:

a low-pass filter of which an input end is connected to an output end of the detector and which is configured to integrate the signal waveform of the incoming data; and

5 a logic circuit of which an input end is connected to an output end of the low-pass filter and which is configured to convert an integral waveform into a digital waveform by use of the given threshold.

4. The power line communication device for a vehicle according to claim 3, wherein the low-pass filter comprises:

10 a resistor of which one end is connected to the output end of the detector and another end is connected to the input end of the logic circuit; and

a capacitor of which one end is grounded and another end is connected to the other end of the resistor and to the input end of the logic
15 circuit.

5. The power line communication device for a vehicle according to claim 3, wherein the logic circuit is a comparator having a hysteresis.

20 6. The power line communication device for a vehicle according to claim 3, wherein the threshold value is set to an intermediate value of at least one of an operating power source voltage for driving a load in a vehicle and amplitude of the incoming data.

25 7. The power line communication device for a vehicle according to claim 6, wherein the threshold is set to 2.5 V.